CLAIMS

1. A method including

persistently maintaining at least one event message until at least one in-tended recipient of said event message confirms delivery of said event message; and

upon recovery from an error, replaying said event message;

whereby said event message is reliably delivered to said intended recipient.

2. A method as in claim 1, including

receiving said event message by said intended recipient; and

generating a confirmation of said event message in response to said event message.

3. A method as in claim 1, wherein said event message is provided by at least one event message producer.

4. A method as in claim 1, wherein said persistent maintenance includes recording said event message in an event-indication queue, said event-indication queue having resources pre-allocated before occurrence of an event associated with said event message.

5. A method as in claim 1, wherein said persistent maintenance in-
2 cludes recording said event message in an event-indication queue, wherein said event-
3 indication queue is reliable even when the event message indicates that allocation of new
4 resources is unstable.

5

6 6. A method as in claim 1, wherein said persistent maintenance in-
7 cludes recording said event message during a duration when delivery of said event mes-
8 sage is not yet feasible.

9

10 7. A method as in claim 6, including
11 upon termination of said duration, replaying said event message;
12 whereby said event message is reliably delivered to said intended recipient.

13

14 8. A method as in claim 6, wherein said duration includes a boot time
15 or an initialization time.

16

17 9. A method as in claim 1, wherein said persistent maintenance in-
18 cludes recording said event message in a persistent memory.

19

20 10. A method as in claim 9, including
21 delivering said event message to said intended recipient;
22 receiving a confirmation of said delivery; and

removing said event message from said persistent memory in response to

2   said confirmation.

3

4   11.   A method including

5   persistently maintaining at least one event message during a duration when

6   delivery of said event message is not yet feasible; and

7   upon termination of said duration, replaying said event message;

8   whereby said event message is reliably delivered to an intended recipient of

9   said event message.

10

11   12.   A method as in claim 11, wherein said duration includes a boot time

12   or an initialization time.

13

14   13.   A method as in claim 11, wherein said event message is provided by

15   at least one event message producer.

16

17   14.   A method as in claim 11, including persistently maintaining at least

18   one event message until at least one intended recipient of said event message confirms

19   delivery of said event message.

20

21   15.   A method as in claim 14, including

22   upon recovery from an error, replaying said event message;

whereby said event message is reliably delivered to said intended recipient.

16.   A method as in claim 14, wherein said persistent maintenance includes recording said event message in an event-indication queue, said event-indication queue having resources pre-allocated before occurrence of an event associated with said event message.

17.   A method as in claim 14, wherein said persistent maintenance includes recording said event message in an event-indication queue, wherein said event-indication queue is reliable even when the event message indicates that allocation of new resources is unstable.

18.   A method as in claim 11, wherein said persistent maintenance includes recording said event message in a persistent memory.

19.   A method as in claim 18, including

delivering said event message to said intended recipient;

receiving a confirmation of said delivery; and

removing said event message from said persistent memory in response to said confirmation.

20.   A method as in claim 11, including

receiving said event message by said intended recipient; and

generating a confirmation of said event message in response to said event

message.

21.   A method including

maintaining at least one event message in a plurality of memory locations, each one of said plurality of memory locations being accessible by both a first server device and a second server device; and

upon recovery from an error at said first server device, replaying said event message from said second server device;

whereby said event message is reliably delivered to an intended recipient of said event message.

22.   A method as in claim 21, wherein said event message is provided by at least one event message producer.

23.   A method as in claim 21, wherein said maintenance includes persistently maintaining said event message during a duration when delivery of said event message is not yet feasible.

24.   A method as in claim 23, including

upon termination of said duration, replaying said event message;

1 whereby said event message is reliably delivered to an intended recipient of

2 said event message.

3

4   25.   A method as in claim 23, wherein said duration includes a boot time

5 or an initialization time.

6

7   26.   A method as in claim 23, wherein said event message is provided by

8 at least one event message producer.

9

10   27.   A method as in claim 21, wherein said maintenance includes persis-

11 tently maintaining said event message until at least one intended recipient of said event

12 message confirms delivery thereof.

13

14   28.   A method as in claim 27, wherein said persistent maintenance in-

15 cludes recording said event message in an event-indication queue, said event-indication

16 queue having resources pre-allocated before occurrence of an event associated with said

17 event message.

18

19   29.   A method as in claim 27, wherein said persistent maintenance in-

20 cludes recording said event message in an event-indication queue, wherein said event-

21 indication queue is reliable even when the event message indicates that allocation of new

22 resources is unstable.

30. A method as in claim 27, wherein said persistent maintenance includes recording said event message in a persistent memory.

31. A method as in claim 30, including

delivering said event message to said intended recipient;

receiving a confirmation of said delivery; and

removing said event message from said persistent memory in response to said confirmation.

32. A method as in claim 30, including

receiving said event message by said intended recipient; and

generating a confirmation of said event message in response to said event message.

33. A method including

delivering at least one event message to a multiplexing recipient;

maintaining said event message at said multiplexing recipient; and

reliably delivering said event message from said multiplexing recipient to at least one intended recipient of said event message.

34. A method as in claim 33, including

receiving said event message by said intended recipient; and

2   generating a confirmation of said event message in response to said event

3   message.

4

5   35.   A method as in claim 33, wherein said event message is provided by

6   at least one event message producer.

7

8   36.   A method as in claim 33, wherein reliable delivery of said event

9   message from said multiplexing recipient includes

10   persistently maintaining said event message at said multiplexing recipient;

11   upon recovery from an error at said multiplexing recipient, replaying said

12   event message from said multiplexing recipient to said intended recipient;

13   whereby said event message is reliably delivered to said intended recipient.

14

15   37.   A method as in claim 36, wherein said persistent maintenance in-

16   cludes recording said event message in an event-indication queue, said event-indication

17   queue having resources pre-allocated before occurrence of an event associated with said

18   event message.

19

20   38.   A method as in claim 36, wherein said persistent maintenance in-

21   cludes recording said event message in an event-indication queue, wherein said event-

1   indication queue is reliable even when the event message indicates that allocation of new

2   resources is unstable.

3

4   39.   A method as in claim 36, wherein said persistent maintenance in-

5   cludes recording said event message in a persistent memory.

6

7   40.   A method as in claim 39, including

8   delivering said event message to said intended recipient;

9   receiving a confirmation of said delivery; and

10   removing said event message from said persistent memory in response to

11   said confirmation.

12

13   41.   A method as in claim 33, wherein reliable delivery of said event

14   message from said multiplexing recipient includes

15   persistently maintaining said event message at said multiplexing recipient

16   until at least one intended recipient of said event message confirms delivery of said event

17   message;

18   sending a confirmation of delivery from said multiplexing recipient in re-

19   sponse to a confirmation of delivery from said intended recipient.

20

21   42.   A method as in claim 41, wherein said persistent maintenance in-

22   cludes recording said event message in an event-indication queue, said event-indication
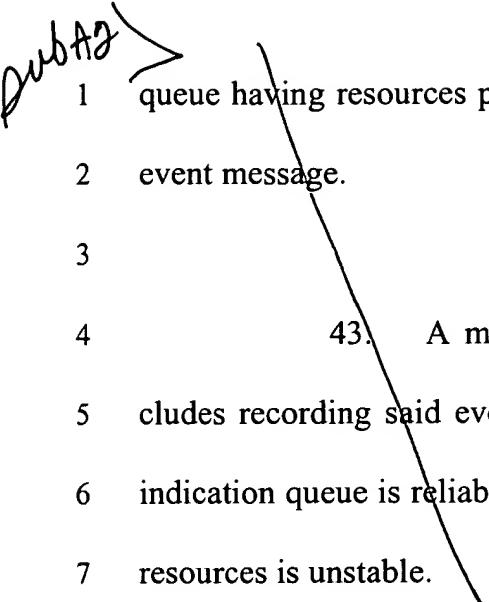
1 queue having resources pre-allocated before occurrence of an event associated with said

2 event message.

3

4   43.   A method as in claim 41, wherein said persistent maintenance in-

5 cludes recording said event message in an event-indication queue, wherein said event-

6 indication queue is reliable even when the event message indicates that allocation of new

7 resources is unstable.

8

9   44.   A method as in claim 36, wherein said persistent maintenance in-

10 cludes recording said event message in a persistent memory.

11
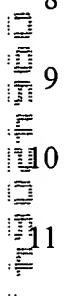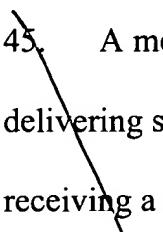
12   45.   A method as in claim 44, including

13   delivering said event message to said intended recipient;

14   receiving a confirmation of said delivery; and

15   removing said event message from said persistent memory in response to

16 said confirmation.

17

18   46.   A memory including instructions, said instructions capable of being

19 interpreted to indicate

20   persistently maintaining at least one event message until at least one in-

21 tended recipient of said event message confirms delivery of said event message; and

22   upon recovery from an error, replaying said event message;

1 whereby said event message is reliably delivered to said intended recipient.

2

3   47.   A memory as in claim 46, wherein said instructions are also capable

4   of being interpreted to indicate recording said event message during a duration when de-

5   livery of said event message is not yet feasible.

6

7   48.   A memory including instructions, said instructions capable of being

8   interpreted to indicate

9   maintaining at least one event message in a plurality of memory locations,

10   each one of said plurality of memory locations being accessible by both a first server de-

11   vice and a second server device; and

12   upon recovery from an error at said first server device, replaying said event

13   message from said second server device;

14   whereby said event message is reliably delivered to an intended recipient of

15   said event message.

16

17   49.   A memory including instructions, said instructions capable of being

18   interpreted to indicate

19   delivering at least one event message to a multiplexing recipient;

20   maintaining said event message at said multiplexing recipient; and

21   reliably delivering said event message from said multiplexing recipient to at

22   least one intended recipient of said event message.

1

3   50.   Apparatus including

3   means for persistently maintaining at least one event message until at least

4   one intended recipient of said event message confirms delivery of said event message;

5   and

6   means for replaying said event message upon recovery from an error.

7

8   51.   Apparatus as in claim 50, including

9   means for receiving said event message by said intended recipient; and

10   means for generating a confirmation of said event message in response to

11   said event message.

12

13   52.   Apparatus as in claim 50, wherein said means for persistently main-

14   taining includes means for recording said event message in an event-indication queue,

15   said event-indication queue having resources pre-allocated before occurrence of an event

16   associated with said event message.

17

18   53.   Apparatus as in claim 50, wherein said means for persistently main-

19   taining includes means for recording said event message in an event-indication queue,

20   wherein said event-indication queue is reliable even when the event message indicates

21   that allocation of new resources is unstable.

22

54. Apparatus as in claim 50, wherein said means for persistently main-

2 taining includes means for recording said event message during a duration when delivery

3 of said event message is not yet feasible.

4

5 55. Apparatus as in claim 54, including

6 upon termination of said duration, means for replaying said event message;

7 whereby said event message is reliably delivered to said intended recipient.

8

9 56. Apparatus as in claim 54, wherein said duration includes a boot time

10 or an initialization time.

11

12 57. Apparatus as in claim 50, wherein said means for persistently main-

13 taining includes means for recording said event message in a persistent memory.

14

15 58. Apparatus as in claim 57, including

16 means for delivering said event message to said intended recipient;

17 means for receiving a confirmation of said delivery; and

18 means for removing said event message from said persistent memory in re-

19 sponse to said confirmation.

20

21 59. Apparatus including

1   means for persistently maintaining at least one event message during a du-

2   ration when delivery of said event message is not yet feasible; and

3   upon termination of said duration, means for replaying said event message.

4

5   60.   Apparatus as in claim 59, wherein said duration includes a boot time

6   or an initialization time.

7

8   61.   Apparatus as in claim 59, including means for persistently main-

9   taining at least one event message until at least one intended recipient of said event mes-

10   sage confirms delivery of said event message.

11

12   62.   Apparatus as in claim 61, including, upon recovery from an error,

13   means for replaying said event message.

14

15   63.   Apparatus as in claim 61, wherein said means for persistently main-

16   taining includes means for recording said event message in an event-indication queue,

17   said event-indication queue having resources pre-allocated before occurrence of an event

18   associated with said event message.

19

20   64.   Apparatus as in claim 61, wherein said means for persistently main-

21   taining includes means for recording said event message in an event-indication queue,

1   wherein said event-indication queue is reliable even when the event message indicates

2   that allocation of new resources is unstable.

3

4   65.   Apparatus as in claim 59, wherein said means for persistently main-

5   taining includes means for recording said event message in a persistent memory.

6

7   66.   Apparatus as in claim 65, including

8   means for delivering said event message to said intended recipient;

9   means for receiving a confirmation of said delivery; and

10   means for removing said event message from said persistent memory in re-

11   sponse to said confirmation.

12

13   67.   Apparatus as in claim 65, including

14   means for receiving said event message by said intended recipient; and

15   means for generating a confirmation of said event message in response to

16   said event message.

17

18   68.   Apparatus including

19   means for maintaining at least one event message in a plurality of memory

20   locations, each one of said plurality of memory locations being accessible by both a first

21   server device and a second server device; and

upon recovery from an error at said first server device, means for replaying

2   said event message from said second server device.

3

4   69.   Apparatus including

5   means for delivering at least one event message to a multiplexing recipient;

6   means for maintaining said event message at said multiplexing recipient;

7   and

8   means for reliably delivering said event message from said multiplexing re-

9   cipient to at least one intended recipient of said event message.

10

11   70.   Apparatus as in claim 69, including

12   means for receiving said event message by said intended recipient; and

13   means for generating a confirmation of said event message in response to

14   said event message.

15

16   71.   In a method including reliable delivery of event messages, a memory

17   including

18   a persistent record of at least one event message until at least one intended

19   recipient of said event message confirms delivery of said event message; and

20   upon recovery from an error, a replayable instance of said event message.

21

72.   A memory as in claim 71, including a record of said event message

2   during a duration when delivery of said event message is not yet feasible.

3

4   73.   A memory as in claim 71, including

5   at least one event message in a plurality of memory locations, each one of

6   said plurality of memory locations being accessible by both a first server device and a

7   second server device; and

8   upon recovery from an error at said first server device, at least one instance

9   of said event message replayable from said second server device.

10

11   74.   In a method including reliable delivery of event messages, a memory

12   including

13   a persistent record of at least one event message at a multiplexing recipient;

14   and

15   an instance of said event message deliverable from said multiplexing re-

16   cipient to at least one intended recipient of said event message.

17

18   75.   In apparatus having elements capable of performing a method, said

19   method including reliable delivery of event messages, a memory including

20   a persistent record of at least one event message until at least one intended

21   recipient of said event message confirms delivery of said event message; and

22   upon recovery from an error, a replayable instance of said event message.

76. A memory as in claim 75, including a record of said event message during a duration when delivery of said event message is not yet feasible.

77. A memory as in claim 75, including

at least one event message in a plurality of memory locations, each one of said plurality of memory locations being accessible by both a first server device and a second server device; and

upon recovery from an error at said first server device, at least one instance of said event message replayable from said second server device.

78. A memory as in claim 75, including

a persistent record of at least one event message at a multiplexing recipient; and

an instance of said event message deliverable from said multiplexing recipient to at least one intended recipient of said event message.